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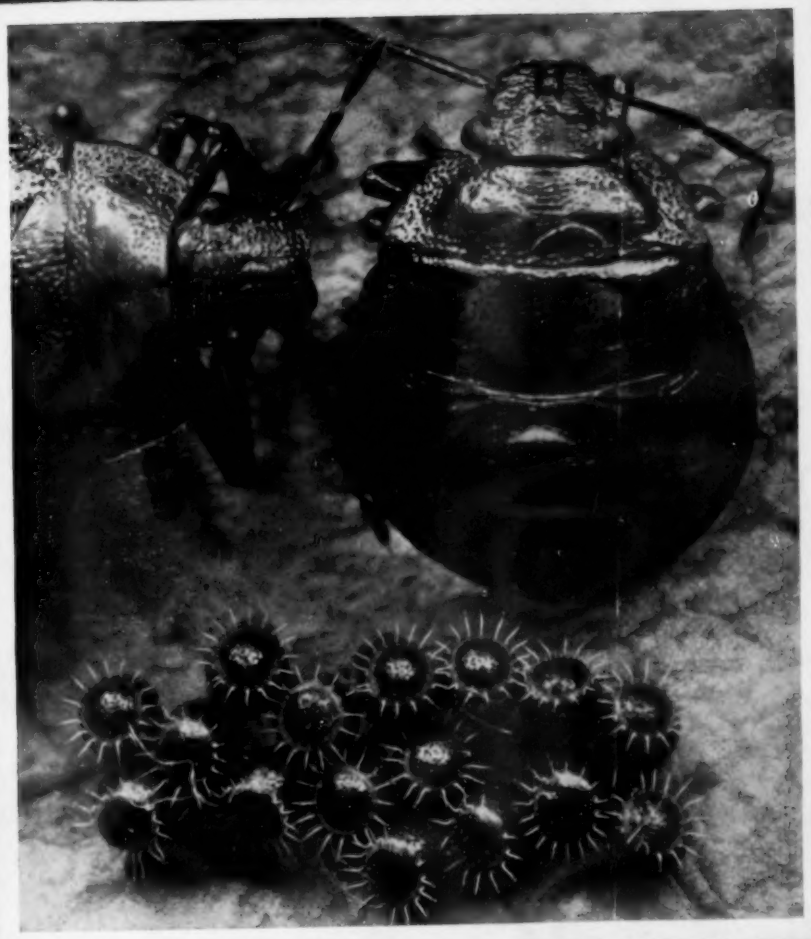
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



AUGUST 6, 1932

Grotesque Parents; Grotesque Offspring

See Page 85

A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

VOL. XXII *No. 591*

The Weekly Summary of Current Science

Published by

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The Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Edited by WATSON DAVIS

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? DO YOU KNOW THAT ?

The tusks carried around by an African elephant may weigh more than 200 pounds each.

Soybeans are now turned into about 50 products in America; while in the Orient 250 products are made of them.

Speaking of the importance of care in measles cases, Dr. Victor Vaughan once said: "Children don't die of measles; they die of neglect."

Synthetic perfumes are being applied to such manufactured articles as paper, rubber, paint, disinfectants, and other products to make them more attractive.

Turkey and Persia have signed a new boundary treaty which places both peaks of the famous Mount Ararat within Turkish territory.

Ninety-nine per cent. of the calcium of the human body is in the bones and teeth; the remaining one per cent. existing as soluble salts in the fluids and soft tissues.

The high peak of Mount Ararat is difficult to climb, and until the first recorded ascent, in 1829, natives of the region believed that no man could climb it.

One German airport field is kept neatly "clipped" by a flock of 1,000 sheep that graze over it.

The ancestor of our domestic cattle, the aurochs of Europe, was much larger than its modern descendants.

An old-fashioned bull terrier that died 50 years ago has been mounted for exhibit at the British Museum.

Esparto grass, which covers vast stretches of the high plateau in Algeria, is becoming increasingly popular as paper-making material.

The U. S. Bureau of Mines has instructed more than half a million persons in methods of giving first aid to the injured.

By crossing two different rubber vines native to Madagascar, government scientists have produced a plant which yields twice as much rubber as either of the parents.

The pharmacist has much less call for his skill and knowledge nowadays, a survey shows, for physicians increasingly prescribe medicines in terms of trade names instead of ingredients to be compounded.

WITH THE SCIENCES THIS WEEK

Curiosity arousing questions for the teacher and general reader. Book references in italic type are not sources of information of the articles, but are references for further reading. Books cited can be supplied by Librarian, Science Service, at publisher's price, prepaid in U. S.

AERONAUTICS

What airship will have an automatic telephone switchboard? p. 88

APPROPRIATIONS

What large government scientific agency received an increased appropriation for the current year? p. 84

ARCHAEOLOGY

What "News" did Xerxes bury under his harem? p. 85

Who were the Hyksos? p. 79. *The Nile and Egyptian Civilization—A. Moret—Knopf*, 1927, $7.50.

ASTRONOMY

Where is the "Great Square of Pegasus" now? p. 83

BIOLOGY

How does the moon influence the reproduction of animals? p. 80

Who removed an earthworm's brain in a very difficult operation? p. 80

CHEMISTRY

From what can protein rayon be made? p. 82

How much is a pound of rhenium worth now? p. 84

ENTOMOLOGY

How many generations has a Drosophila in a year? p. 80. *Genetics and Eugenics—W. E. Castle—Harvard University Press*, 1930, $3.

ETHNOLOGY

What is "Zep"? p. 81. *The Geography of Witchcraft—M. Summers—Knopf*, 1927, $7.50.

EXPLORATION-GENERAL SCIENCE

Why is Second International Polar Year a misnomer? p. 89

METEOROLOGY

How are pillars of sea mist formed? p. 84

ORNITHOLOGY

Do bobwhites withhold their scent? p. 85. *The Bobwhite Quail—H. L. Stoddard—Scribner's*, 1931, $6.

PHYSIOLOGY

How would two scientists relieve sufferers from stomach ulcers? p. 89

PSYCHOLOGY

What was the exact numerical result of the vote against war? p. 79

SEISMOLOGY

How does Dr. Terada explain that earthquake activity may increase the catch of fish? p. 85

Where are automatic seismographs being set up? p. 81

PSYCHOLOGY

War Is Not Human Instinct Prominent Psychologists Hold

Specialists in Behavior Vote in Extensive Poll That Human Nature Does not Make War Inevitable

WAR is not instinctive and ineradicable.

By a vote of 346 to 10 the members of the American Psychological Association, those scientists primarily concerned with laws governing human behavior, have registered their opposition to the doctrine advanced by some soldiers, law-makers, journalists, economists and historians that war is a part of human nature and cannot be stopped.

The vote on the traditional doctrine concerning man's war-making instinct was conducted by Prof. John M. Fletcher of Tulane University, New Orleans. His questionnaire asked:

"Do you as a psychologist hold that there are present in human nature ineradicable, instinctive factors that make war between nations inevitable?"

The 528 members of the association were polled to obtain "a sort of official expression of opinion by psychologists." Seventy per cent. or 378 voted. The result was: "No," 346; "Yes," 10; unclassified, 22.

In announcing these results in the current issue of the *Scientific Monthly*, Prof. Fletcher explained: "There was no intention to draw inferences as to the attitude of psychologists respecting the possibility of ending war, or respecting any particular plan of doing so."

Yet 71 of those opposing the idea of war instincts gave emphasis to their answers by heavy underscorings, exclamation marks, or repetitions. Some negative voters called the question obvious and others added comments.

"No. What damned fool does?" answered Dr. H. M Johnson of American University.

"War is social degeneration comparable to individual insanity," said Dr. P. Hughes of Lehigh University.

"We may have a pugnacious instinct, but it can be controlled, as experience amply shows," replied Prof. S. J. Holmes, University of California zoologist.

"Adequate universal education will show war's medievalism and barbarism.," said Maj. George Van Ness Dearborn, chief of the department of medical psychology at the U. S. Veterans' Hospital, New York.

"The abolition of duels in Anglo-Saxon society is a striking and suggestive fact worth remembering," commented Dr. Adolph Meyer, psychiatrist-in-chief of the Johns Hopkins Hospital, Baltimore.

"Individuals engineer war and all other coöperative large scale operations of society," declared Prof. H. A. Toops of Ohio State University.

"We could get rid of formal war, but there would still be criminal nations that need policing and punishment. The social problem of war is like the individual problem of crime," commented Prof. Edwin G. Boring of Harvard.

"War is natural relief to adverse economic conditions that result from crowding. A civilization that provides adequate sustenance automatically makes war unnecessary," said Dr. J. P. Hylan of Stoneham, Mass.

"It is conceivable that other methods of settling disagreements may yet be found, methods more effective and socially more acceptable," declared Dr. Elizabeth T. Sullivan of the University of California at Los Angeles.

"It is a long road to travel to international peace, but undoubtedly we are already far on the way," (*turn page*)

NOT GEORGE WASHINGTON

For the first time, the modern world can see what the famous Shepherd Kings of antiquity really looked like.

ARCHAEOLOGY

New Discovery May be First Likeness of Shepherd King

FOR THE FIRST TIME, archaeologists feel assured that they have unearthed a portrait of one of the Hyksos, the "Shepherd Kings" who engineered one of the strangest interludes in Egyptian history, about 1700 B. C. Invading Egypt in a whirlwind attack, riding on horses and armed with bows, the Shepherd Kings overthrew the Egyptian kings and ruled the country for centuries.

The portrait statuette was unearthed in the ruins of Tell el-Ajjul in southern Palestine, a site identified as the famous Gaza of Bible history. The site is being excavated by the British School of Archaeology in Egypt, under the direction of Sir Flinders Petrie.

The statuette is pronounced unlike the Hittites, Amorites, Semites, or indeed any other race known from its day. It is the first of its kind to be found, and is therefore believed to be a likeness of one of the mysterious Hyksos. It was unearthed from a level of Gaza's ruins occupied by the Hyksos.

The thick flop of trimmed hair is said to be just such a style as the shepherds on horseback might well have chosen.

commented Dr. M. J. Mayo of Harris Teachers College, St. Louis.

"Instinctive factors make contest but not war inevitable. The way to eliminate war is probably to eliminate nations," suggested Dr. Elmer Culler of the University of Illinois.

Prof. Fletcher in summarizing the vote pointed out that the question did not inquire whether human nature has pugnacious, competitive or predatory tendencies, nor whether clashes of interests must continue to arise between nations. The question asked whether or not the mode of adjustment of conflicts between nations must inevitably lead to war, as tradition has maintained. He worded the answer as follows:

"Without raising the issue as to the inevitability of conflicting claims and interests arising between nations, American psychologists are almost unanimously agreed that the traditional opinion that instincts determine the mode of adjustment of these conflicts is without scientific warrant."

Science News Letter, August 6, 1932

ENTOMOLOGY

Rapid Evolution Produces New Insect Species Almost Daily

By DR. L. O. HOWARD, Prominent American entomologist, and former chief of U S. Bureau of Entomology.

NEW SPECIES are appearing almost every day. Evolution is slow but in creatures that have many generations a year, it may seem rapid in comparison.

So said Dr. Paul Marchal, eminent French scientist, in his address as president of the Fifth International Congress of Entomology in Paris. He showed the enormous advance in general biology that has been made since the first International Congress of Entomology was held at Brussels in 1910.

Students of genetics have seized upon the little flies known as Drosophila as the most available form for study, and the T. H. Morgan school of geneticists has grown up from their labor. A Drosophila has 25 generations in a year. It would take the higher animals scores of years to pass through as many generations. Species are in the making all the time.

With a wealth of knowledge of results accomplished by workers in all branches of biology and in all parts of the world, Dr. Marchal delivered a brilliant and very convincing address.

Dr. Marchal also strongly advised Paris to follow the leadership of America and begin an anti-fly and mosquito crusade, when he told the president of the municipal council of Paris of the dangers to health existing in uncontrolled house flies and mosquitoes. The need for the campaign was stressed during Dr. Marchal's address at the official reception tendered the congress at the Hotel de Ville.

Insects acquire immunity to bacterial diseases similarly to human beings, Dr. N. Metalnikoff of the Pasteur Institute, Paris, told the congress. He reported many experiments on the transfer of immunity from one species to another.

No added light has yet been thrown on tuberculosis in man through the study of the galleria genus of the wax moth, Dr. Metalnikoff said. The larvae of this moth feed on honey comb and as the tubercule bacillus is covered with a wax coating it was hoped that investigation of the insect might give some new suggestions in combatting tuberculosis.

Science News Letter, August 6, 1932

BIOLOGY

Extra Hours of Moon Affect Reproduction of Animals

THE EFFECT of the moon on the reproductive cycle of living organisms, particularly marine animals, has been given a new explanation by Prof. H. Munro Fox, of the zoological department of the University of Birmingham, who believes that the lengthened hours of light at full moon hold the answer to the problem.

Scientists have been puzzled to account for this effect of the moon, since the intensity of the light of the full moon is only about one five-hundred-thousandth that of sunlight. Prof. Fox disagrees with the theory which has been previously advanced that the partially polarized light of the moon is the causal factor.

"Recent experimental work, however, on the influence of light on sexual periodicity in general, suggests a way in which moonlight might impose a lunar periodicity," he says in a report to *Nature*. "In mammals and birds the length of the breeding season appears to depend in part on the daily number of hours during which the animals are exposed to light. Thus the moon may perhaps cause a lunar cycle in reproduction, not through its relatively small intensity of light as compared with that of the sun, but by the additional total number of hours of illumination per 24 hours at full moon, over and above a threshold light value."

Prof. Fox urged test experiments.

Science News Letter, August 6, 1932

BIOLOGY

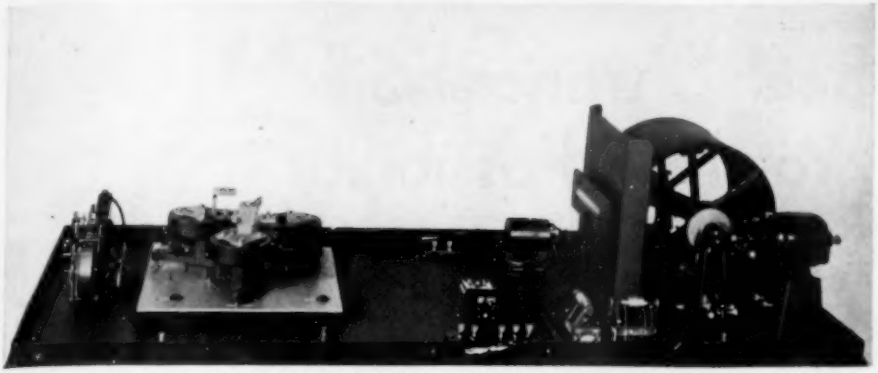
Earthworm Little Embarrassed By Total Lack of Brain

EARTHWORMS, humble as they are, cannot get along without any brains. But it does not seem to be more than moderately embarrassing for them to lose the little brain they have, known technically as the cerebral ganglion.

Dr. Henry G. Schwartz, of the Johns Hopkins University, removed the cerebral ganglion of an earthworm, by an exceedingly delicate and skilful operation. The earthworm lived on, and in a short time had replaced the missing nerve center with a new one. Curiously enough, however, the new "brain" was not regenerated from the nerve cells with which it had once been connected, but from neighboring connective tissues.

The operation was not an entire success, from the earthworm's point of view. Due apparently to the failure of the new "brain" to make connection with the rest of the nervous system, the worm could no longer burrow, and crawled about with raised anterior end, or "head."

Science News Letter, August 6, 1932



WAITING FOR EARTHQUAKES

SEISMOLOGY

Seismographs Set for Spot Records of Coming Quakes

Automatic Instruments in Vital Locations Expected to Bring Valuable Records Through Next Great Disturbance

THE NEXT great earthquake to visit the United States will very likely write its own record of destruction and leave this story intact so that engineers may study it and learn how to build better shock-resistant structures.

For the U. S. Coast and Geodetic Survey is installing in regions where strong earthquakes have occurred, automatic seismographs which are designed to "sleep" until a severe quake comes, for years if necessary; but which, when aroused by impending disaster, will spring to life by recording the shock and by ringing a bell to give notice of their action.

The installation of this equipment was announced by Director R. S. Patton of the Coast and Geodetic Survey. Some of the instruments are being set up in those parts of California where severe earthquakes have been felt during the past 75 years.

Permanent Instruments Damaged

Architects, builders and seismologists hope to get exact measurements of earth movement which cause material destruction. There is very little information of this kind in existence now for, when shocks become violent, seismographs at permanent observatories in the earthquake area are rendered inoperative and sometimes badly damaged. But the new apparatus is rugged and, not being very sensitive, will not begin to operate until those in larger observatories are helpless. Even though some of the instruments be destroyed by a big shock, enough should survive to give valuable records. They are being set up in basements of buildings, on bridge piers and in other vital locations.

The automatic features of the instruments which permit them to remain at rest and instantly spring ino full action when necessary are of great interest to scientists, Capt. N. H. Heck, who is in charge of the Coast and Geodetic Survey's seismological work, explained. He said that seismologists have attempted to accomplish this from the earliest days of scientific interest in earthquakes but the present apparatus is the first in which it has been successfully done.

Three Kinds

Three kinds of instruments are being used. That which will yield the most important information is the accelerometer, recorder of the violence of an earthquake. It was designed by Dr. Frank S. Wenner of the U. S. Bureau of Standards. The actual distance through which the earth sways and the speed of the sway will be measured by a displacement meter which, together with special recording apparatus, was designed by scientists of the Coast and Geodetic Survey.

A third instrument, that gives less complete information but weighs only 15 pounds and need not be kept in the dark as is necessary with the others, is the Weed strong motion seismograph developed by Arthur J. Weed of the University of Virginia. It is comparatively inexpensive.

M. W. Braunlich of Massachusetts Institute of Technology made the starting devices for the three types of apparatus.

Science News Letter, August 6, 1932

ETHNOLOGY

Black Magic of Witchcraft Reappears in England

By E. N. FALLAIZE

BLACK magic is increasingly apparent in certain sections of European society.

A remarkable fortune-telling case has been tried in one of the courts of law in Yorkshire, England; and a woman fortune-teller has been convicted and condemned to eighteen months imprisonment for defrauding two spinster sisters of $1500 by promising to bring before them their future husbands and hold the men until they married the two sisters.

The methods employed were unusual in modern fortune-telling and in many respects are more like a survival of the methods of the ancient soothsayer or the mediaeval witch. They remind us of the witches of Macbeth with their smoking magic cauldrons. For among the devices of this fortune-teller were the magic ointment with which the witch anointed herself and others, the love charm which bound the lover, and the smoke serving as the magic mirror in which were to appear the visions of persons and events belonging to the future.

The principal ingredient in this case was a magical preparation called "zep" for which the sisters were induced to pay out large sums of money. Ancient witches made their ointment chiefly with the fat of young dead babies whose bodies they had dug up. "Zep," however,

was said to be made in Germany from the body of some mysterious animal from the East. It cost nearly $400 a bottle. To be effective its use had to be prolonged over a course of two years.

The method of using the preparation involved another very primitive magical idea. Just as the savage believes that anything which has been in contact with the human body may be effective in working magic for or against that person, so these sisters were told that they were to wear a piece of cloth next their bodies for 24 hours. This was then to be burnt in the flame of a lamp by the fortune-teller and each would see her future husband in the smoke. This vision of the future husband on certain occasions such as St. John's Eve (June 23) or New Year's Eve is a common belief in peasant folklore everywhere; but in this case the smoke evidently takes the place of the crystal ball more commonly used by the fortune-teller, or the pool of ink in the palm of the Arab boy employed in Egypt, or of a pure youth as in Persia, where future events are to be foretold.

In addition, the "zep" was to serve the purpose of a binding charm, for it was to hold the lover. But as time went on and nothing happened, it became evident that it would not be efficacious unless used in a more materialistic fashion. One of the sisters was told that she must induce a man to come to the room and the fortune-teller would then sprinkle "zep" over him, so that he could never get away.

Science News Letter, August 6, 1932

PALEOBOTANY

Gall Swellings Found On Fossil Oak Leaf

GALL-FLIES flew in the Miocene, back in the times when wild camels and three-toed horses scampered in the country that is now Oregon. This is indicated by an interesting fossil oak leaf that has been studied by Arnold D. Hoffman of the University of Chicago.

Split out from between layers of shale, the leaf impression shows 25 flattened-down swellings closely resembling the hypertrophied growths caused on leaves and stems of present-day plants by the little wasps called gall-flies, that lay their eggs in plant tissues to give their young an abundant food supply.

Science News Letter, August 6, 1932

CHEMISTRY

Real "Artificial Silk" Is Promising Possibility

Silkworm's Cocoon Would Be Chemically Made Over To Produce Fiber Closely Resembling That of Nature

WHEN SCIENTISTS learned how to make a silk-like thread from the cellulose of cotton or wood, they dethroned the silkworm as the premier producer of material for stockings, dresses, and other intimate and public apparel for both sexes. Rayon or "artificial silk" is one of the new materials that the industrial revolution has made available generally since the World War.

Science now promises to invade the domain of the silkworm again. The production of real "artificial silk" is promised. The term real artificial silk may sound like a bull, but the new process justifies it.

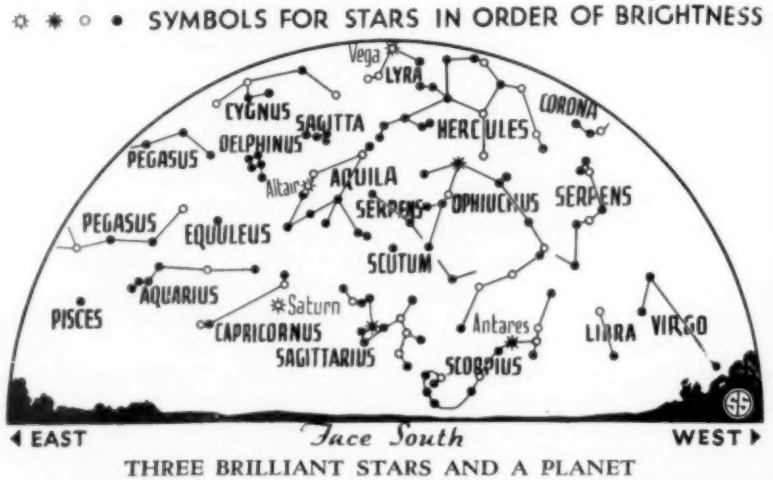
The real artificial silk is a regenerated silk. The silkworm is a necessary actor in its making. Unlike rayon, which is not silk at all, the new fiber is real silk. It is artificial, however, because it is formed into fiber in much the same way as rayon.

In making regenerated silk, the silkworm's cocoon is converted into a sericin-fibroin solution of liquid consistency just about that which occurs within the body of the silkworm before it spins its silk filament. It is a solution of real silk. From this point on, the process uses the experience of rayon manufacture. The silkworm solution is made into yarn as though it were cellulose solution destined to be rayon. It is squirted out of very fine holes into filaments that are twisted by a spinning machine into yarn.

Protein Rayon

The *American Silk Journal* believes that this real artificial silk will soon become an accomplished industrial fact. Perhaps it will be called a protein rayon instead of a cellulose rayon since the silk solution is a protein manufactured by the silkworm. It is said that the new product will approach real silk much more closely in its physical and chemical properties than any of the existing synthetic fibers.

The regeneration process has been perfected by the Japanese but the story is that the Japanese government will not permit its commercial utilization because it would seriously affect the estab-



THREE BRILLIANT STARS AND A PLANET

These are attractions of the southern skies during August. The three stars are of the first magnitude—Vega, Altair and Antares—and the planet is Saturn, the heavenly object girded by peculiar rings. The other two first magnitude stars visible are Arcturus and Deneb in the northern skies.

lished sericultural industry of that country. But American and European inventors have also produced processes and real artificial silk will probably come into use despite Japanese curbs.

The next step would be to duplicate synthetically the protein solution that the silkworm makes and make a real and wholly synthetic silk. Undoubtedly attempts are being made but success lies in the future.

Science News Letter, August 6, 1932

PHYSIOLOGY

Gland Extract Increases Body Growth But Not Brain

THE "BOOM FOOD" that formed the basis for one of H. G. Wells' earlier imaginative novels, causing gigantic growth in everything from human beings to hornets, might have produced huge creatures but would not have generated geniuses.

Such at least is the indication of experiments on white rats by Dr. H. S. Rubinstein of the University of Maryland Medical School. Dr. Rubinstein gave a number of the rats daily injections of extracts from the anterior lobe of the pituitary gland, which secretes a growth-speeding hormone. Litter-mates of the rats were kept as "controls," without the hormone injections.

It was found after ten weeks that the body-weights of the injected rats had increased appreciably over the weights of the controls. But when the rats were killed and their brains removed and compared, it was found that the injected rats had not gained brain weight in proportion to their gains in bodily growth.

Science News Letter, August 6, 1932

ASTRONOMY

Changing Constellations and Meteors Featured in Skies

Famous Perseid Shower is Expected to Reach Maximum on Night of Aug. 11 or 12 for Observers Throughout Country

By JAMES STOKLEY

THE MONTH of August does not depend for astronomical interest entirely on the eclipse occurring on the thirty-first. (*SNL, July 30, '32.*)

The summer constellations are beginning to disappear from the evening sky in the east and their places are being taken by those of autumn. The "Great Square of Pegasus" has begun to shine just above the eastern horizon. The "Northern Cross" in Cygnus, the swan, is high overhead a little to the east of the zenith. Still higher is Lyra with the brilliant Vega, while the star Altair in Aquila is seen just to the south. Near the southern horizon is Scorpius with the scorpion's tail curling toward the east. Just above the end of the tail is Sagittarius, the archer. Some of the stars in this constellation form what is often called the "Milk Dipper." This implement is inverted and the handle points toward the west point of the horizon.

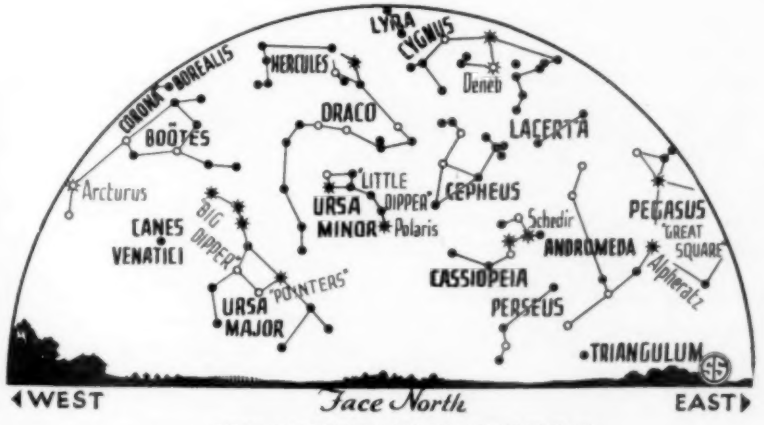
Spica, the most brilliant star in Virgo, is very low in the southwest (in that part of the constellation not shown on the map) and above it is Bootes, with the bright Arcturus to mark its location. The great bear, Ursa Major, with the familiar "Great Dipper" is descending into the northwest. By means of the two pointers, now the lowest part of the Dipper, we can locate the pole star, which is at the end of the handle of the little dipper, and forms part of Ursa Minor, the little bear. Cassiopeia, in the shape of the letter W, is seen to the eastern side of the pole, directly opposite the pointers.

Vega, Arcturus, Altair, Antares, the reddish star in Scorpius, and Deneb, the star at the end of Cygnus toward the north—these are the first magnitude stars now visible in the evening sky, and are the ones you should learn first if you want to know the constellations. In addition, August brings a planet to the evening sky. This is Saturn, famous for its remarkable system of rings. Just after sunset you can see it low in the southeast, below Altair, its steady glow making it distinctly different from the scintillating stars.

In addition to the stellar and planetary attractions scheduled, August is always of interest for the famous Perseid meteor shower. Because the earth turns so that we then meet them head-on, we can always see more meteors, or "shooting stars," after midnight than before. If you watch the sky for an hour on any night, you will probably see several of these bodies, which are really dust particles, most of them being no larger than a grain of sand or the head of a small pin, that are heated to incandescence and consumed in a blaze of glory when they enter the atmosphere of the earth. But if you watch the northeastern sky on the night of August 11 or August 12, you will see many more, provided the weather is clear and permits you to see any celestial objects. Then you may see as many as one or two a minute.

Astronomers who make a specialty of meteor study are always glad to receive observations from volunteer assistants. Just count the number of meteors you see during half hour periods, and send the numbers, with a full account of the circumstances under which the observations were made, to Dr. Charles P. Olivier, the University of Pennsylvania, Philadelphia, Pa.

Science News Letter, August 6, 1932



THE "GREAT BEAR" DESCENDS

Ursa Major with the familiar "Big Dipper" is low in the northwest at this season, and the two pointers by which the pole star can be located are the lowest part of the Dipper.

CHEMISTRY

Rare Element Rhenium Produced in Germany

OVER three hundred pounds of the rare chemical element rhenium will be made available for industrial use each year by the utilization of a waste material from a Mansfield copper ore, the German correspondent of the American Chemical Society reports.

Rhenium was discovered in 1925 by Drs. Walter and Ida Noddack, a husband and wife team of Berlin chemists, and it is element 75 in the table of atomic numbers. The first gram (less than a thirtieth of an ounce) of the metal cost the discoverers some $12,500 to produce.

Dr. Wilhelm Feit of a chemical concern at Leopoldshall, Germany, tested the schist waste for rhenium because it contained molybdenum, an element with which Drs. Noddack found rhenium associated. Although the molybdenum-bearing waste contains only two parts rhenium in ten million, Dr. Feit has extracted the rare element from it successfully.

Metallic rhenium and its compounds are expected to prove useful as catalysts in speeding up chemical reactions in various ways. It will also probably be used as an alloy with the noble metals, such as platinum. Its presents price is about $1,600 a pound.

Science News Letter, August 6, 1932

GENERAL SCIENCE

More Than Nine Millions Cut From Research Funds

MORE THAN nine million dollars have been cut from the funds of the U. S. Government departments devoted to scientific research. This is revealed by a survey made by Science Service of the figures in Congressional appropriation bills just published.

During the fiscal year 1931-32 just ended, about $75,800,000 was available in the various departments for scientific and research work. For the coming year this amount has been slashed by the economy program to about $66,300,000. This is a cut of approximately 12.5 per cent.

Hardest hit among the departments doing scientific work are the Geological Survey in the Department of the Interior whose funds are reduced 30.6 per cent., the National Bureau of Standards with a cut of 25.7 per cent., the Bureau of Fisheries with a cut of 32 per cent. and the Bureau of Labor Statistics whose funds have been reduced 22.5 per cent. The total saving of all government expenditures was only about 19.7 per cent.

Some individual programs of research are even more seriously affected than the average reduction would indicate. Cuts on specific items at the National Bureau of Standards, for example, vary from 12 and 16 per cent. on some to as much as 50 per cent. on others. In addition to cuts in appropriations, money available for scientific research is further depleted by the special economy legislation providing for a pay reduction of 8.3 per cent. which money cannot be used by the departments where the saving is made but is to be impounded and paid back into the treasury.

The regular appropriation bill for the U. S. Coast and Geodetic Survey cut its funds $676,120, or 22 per cent., but the Emergency Relief Act more than compensated for this cut by a $1,250,000 appropriation.

Science News Letter, August 6, 1932

PHYSIOLOGY

Brains Mapped in Study of Man's Rise to Supremacy

MAN OWES his slow but steady rise to supremacy in the animal kingdom to the domination of his higher brain centers over those other portions of his nervous system which in lower animals are relatively independent.

This is confirmed by a two-year experimental investigation of nervous systems of primates made by Dr. John F. Fulton and Dr. Allen D. Keller in Yale University laboratories.

Thirty-six animals, including monkeys, baboons, gibbons, and chimpanzees, representing progressively higher stages of development, were studied to reveal the evolutionary background of the human nervous system.

The parts of the cerebral hemispheres of the brain which control the extremities in these forms were stimulated electrically so that exact "maps" of these centers for movement of various parts were secured. These regions were then removed and it was found that the animals highest in evolutionary development of the brain (i. e., the chimpanzee) suffered the most marked paralysis, approaching that of human beings.

Science News Letter, August 6, 1932

IN SCIE

METEOROLOGY

Pillars of Sea Mist May Be Foundation of Myth

THE BIRTH of Venus from the foam of sea, one of classic antiquity's most charming legends, may possibly be traceable to an actual phenomenon.

To the same source may be traced the tales of the "daughters of Nereus," who often rose from their briny home and danced over the waves, helping or warning endangered mariners.

This opinion is ventured in the German scientific journal *Forschungen und Fortschritte* by Prof. Johannes Walther of Halle University. Prof. Walther tells of a recent voyage in Grecian waters, when a snowstorm was brewing and the waves were high. The cold air striking the warm water caused numerous columns of white vapor to rise over the foamy caps of the waves. They hovered momentarily, then were caught up whirling by the wind, and as they spun away through the air it did not require any violent stretch of the imagination to see them as feminine figures dancing in filmy draperies. It all happened in ten minutes or less; but the time sufficed to give Prof. Walther a better understanding of the old legends.

Science News Letter, August 6, 1932

SEISMOLOGY

Another Quake Affects Mexican West Coast

AN EARTHQUAKE centered in the Pacific off the Mexican coast south of the city of Colima Monday morning, July 25, at 4:12.7 a. m. E.S.T. The exact location of the earthquake, the latest in a series that has affected the west coast of Mexico, was determined through instrumental reports telegraphed to Science Service by seismological stations and interpreted by the U. S. Coast and Geodetic Survey. The epicenter was 17 degrees north latitude and 104 degrees west longitude.

Science News Letter, August 6, 1932

EE FIELDS

ENTOMOLOGY

Weird Stink-Bug Parents Produce Curious Eggs

See Front Cover

"LIKE PARENT, like child," is one of the oldest and best-known folk-proverbs. It holds outside the human realm, too. For instance, the pair of stink-bugs which Cornelia Clarke's magnifying camera lens caught for the cover of this issue of the SCIENCE NEWS LETTER are weird enough little monsters, in all conscience; and their cluster of eggs, each crowned with its little circlet of bristles, are just as odd in their own way.

Science News Letter, August 6, 1932

ARCHAEOLOGY

Document by Persian Emperor Found at Persepolis

WHEN the Persian Emperor Artaxerxes I completed his palace-masterpiece, the Hall of a Hundred Columns in Persepolis, he made an inscription to tell of the historic event, and placed the document in the foundation of the building. The historic document, which was "news" in the fifth century B. C., has become news again. It has been unearthed by American archaeologists who are excavating the ruins of Artaxerxes' palace.

Discovery of the document has just been announced by Dr. James H. Breasted, director of the Oriental Institute of the University of Chicago, upon receipt of a cablegram from the Institute's Persian expedition led by Dr. Ernst E. Herzfeld.

Dr. Breasted has not yet learned the contents of the Persian emperor's statement, but there is reason to believe it contained facts that will add to knowledge of Persian history.

The excavators previously found a marble slab bearing 40 lines of writing buried under the harem palace of Xerxes, the father of Artaxerxes. This inscription has yielded important facts regarding the ancestry and reign of the famous Emperor Xerxes.

Finding the second such inscription leads the expedition to believe that a record of this sort will be found under each of the great buildings of the Persian emperors, in the old capital city.

The vast group of Persian palaces is nearly a third of a mile long and a thousand feet wide, Dr. Breasted explained.

"The Oriental Institute expedition," he said, "has discovered that this enormous terrace was systematically laid out and the positions of the buildings determined in advance, so that before they were erected, the engineers could lay out a vast drainage system in which the conduits and the down-spouts carrying off the rain water from each building were already in place before the buildings were begun."

Science News Letter, August 6, 1932

SEISMOLOGY-FISHERIES

Earthquake Activity May Affect Catches of Fish

THE OCCURRENCE of earthquakes may increase the catch of mackerel and other fish, it was suggested by Dr. Torahiko Terada, of the Earthquake Research Institute of Tokyo Imperial University.

Dr. Terada found a parallelism between the incidence of earthquakes and particularly large catches of fish over a period of years, which he believes cannot be explained as mere coincidence.

"Though it will be premature to propose anything like an explanation of the relation of which the existence has just been sheerly shown here as probable," he said, "it will not be useless to point out different possibilities conceivable in connection with the present problem, especially for the purpose of drawing the attention of oceanographers and biologists in seismic countries, without whose collaborations it will be difficult to pursue the present investigation any further.

"Firstly, the seismic shocks or some kinds of mechanical stimuli associated with them may be directly felt by fishes and induce them to approach the fishing ground in some or other ways. Secondly, the shocks may somehow affect the depth of the layers with the greatest density of some planktons edible for the fishes. Thirdly, the earthquakes may affect the chemical nature of the coastal sea water due to the disturbance of the subterranean water and thus indirectly affect the planktons or fishes. These possibilities could be tested by observation, or by some experiments, if desired."

Science News Letter, August 6, 1932

ORNITHOLOGY

Bobwhite Becomes Friendly In the Summer Time

THE BOBWHITE quail, known to winter hunters as a wild, timid bird, haunts farmyards and appears to like human society in the summer, Arthur C. Bent says in a report issued by the Smithsonian Institution.

Among other curious facts about this common bird, Mr. Bent explains why they are believed sometimes to "withhold their scent" thus eluding dogs.

"The explanation probably is that the rapid passage through the air dissipates most of the scent from the plumage. The birds being frightened, crouch low on the ground with feathers closely pressed against the body, shutting in body odors. And, as they have not run anywhere, there is no foot scent."

Under ordinary circumstances, however, the bobwhite shows a definite preference for using his feet rather than his wings, it seems.

"Quail do much of their traveling on foot, and they are great travelers," Mr. Bent reports. "In some sections they are said to make seasonal migrations from one type of country to another, the journeys being made largely on foot. I believe they prefer to escape their enemies by running, until too hard pressed. A bird dog will often trail a running bevy for a long distance."

Science News Letter, August 6, 1932

ASTRONOMY

Borelly's Comet Sighted On Regular Visit

BORELLY'S periodic comet, an occasional visitor to the neighborhood of the sun, was sighted by Dr. George Van Biesbroeck of Yerkes Observatory, Williams Bay, Wis., early on Saturday morning, July 30. The information was forwarded to the American clearing house for astronomical news at Harvard College Observatory.

When first observed, the comet was of twelfth magnitude, far below naked-eye visibility, and had no tail. Its position, in the astronomical equivalents for latitude and longitude, was right ascension five hours thirty-one minutes fifty-four and seven-tenths seconds, declination plus thirteen degrees two minutes thirteen seconds. This puts it in the neighborhood of the zodiacal constellation Taurus, the bull, near the very bright star Aldebaran.

Science News Letter, August 6, 1932

MECHANICS

The Corliss Engine

"A Classic Invention"

One of the Major Improvements in the Steam Engine Is the Corliss Valve and Its Regulating Governor

CUT-OFF AND WORKING THE VALVES OF STEAM ENGINES. Geo. H. Corliss, of Providence, R. I. U. S. Patent No. 6,162, dated March 10, 1849; reissued May 13, 1851, No. 200.

BE IT KNOWN that I, George H. Corliss of the city and county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Steam-Engines; and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known and of the manner of making.

In constructing the frame work of what are known as beam engines it is highly important to avoid the working or yielding of the frame under the action of the varying forces of the engine, for it is to such working and yielding of the frame that the breaking of engines is mainly due. The numerous devices which have been essayed to remove this evil establishes conclusively the importance of a practical remedy.

Beam Supported on Standards

The object of the first part of my invention relates to the method of avoiding this difficulty and consists in supporting the shaft of the working beam on two vertical standards that are erected on two horizontal beams secured and resting at the ends on the bed, the upper end of the two standards being connected to, and braced with the ends of the horizontal beams by means of diagonal tension screw braces so that during the upward motion of the piston the strain from the base of the cylinder to the bearings of the working beam, shall be along one set of diagonal tension braces, and from these bearings to the support of the crank shaft along the set of diagonal braces on the other side, and during the downward motion shall be vertically along the line of the standards onto the horizontal beams which are prevented from working by the tension of the diagonal tension braces.

In steam engines operated with slide valves, particularly the large condensing engines made in England, the valves are connected and moved together in pairs, one at each end of the cylinder, and therefore move together over the same extent of surface, and as the power required to move them is due to the friction produced by the pressure of the steam on their surface and their range of motion under this pressure it follows that the valves while closed require the most power, for much of this friction is relieved the moment the valves are partly opened. One of the valves must always be closed while the other is being opened or closed, hence the closed valve is moved at an entire sacrifice of power. To save this, several devices have been resorted to, such as cams, the irregular working of which, makes too much noise, and renders the whole liable to derangement, but by my invention I am enabled to reduce the motion of the closed valve relatively to that of the other valve, and thus greatly to reduce the amount of power heretofore required for this purpose. This the second part of my invention therefore consists in communicating motion to the two valves from one rack shaft by connecting each valve with a separate arm or crank wrist of the rocker, the two arms making such an angle with each other dependent on the position of the valves and the rocker so that the point of connection of the closed valves shall vibrate near the dead point, and therefore give but a small amount of motion to that valve while the other which is being opened and closed is moving along that part of its circuit which shall give the greatest longitudinal motion, and therefore giving to that valve the greatest amount of motion. By this means I not only save much of the power due to the working of the valves when closed but at the same time I attain the important advantage of greatly accelerated motion of the valves whilst opening and closing the ports.

The third part of my invention relates to the method of regulating the cut off, of the steam in the main slide valves, and consists in effecting this by means of the governor which operates cams, so that when the velocity of the engine is too great these cams shall be moved by the centrifugal action of the regulator that a catch on the valve rods may the sooner come in contact with them to liberate the valves and admit of their being closed by the force of weights or springs, and thus cut off the steam in proportion to the velocity of the engine this being done sooner when the velocity of the engine is to be reduced and later when it is to be increased. . . .

Safely Braced

From the above arrangement it will be seen that by drawing the tension brace rods by means of the nuts, the standards will be forced down onto the horizontal beams, and that the tension braces will be strained or drawn tight, so that during the upward action of the piston the downward force of the steam on the bed plate and the upward thrust in the boxes of the working beam shaft will be exerted along the diagonal line of the tension brace rods and from the shaft of the beam along the other diag-

RADIO

The Science Service radio address next week will be on the subject,

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by

Dr. John Johnston

Director of research for the United States Steel Corporation

FRIDAY, AUGUST 12

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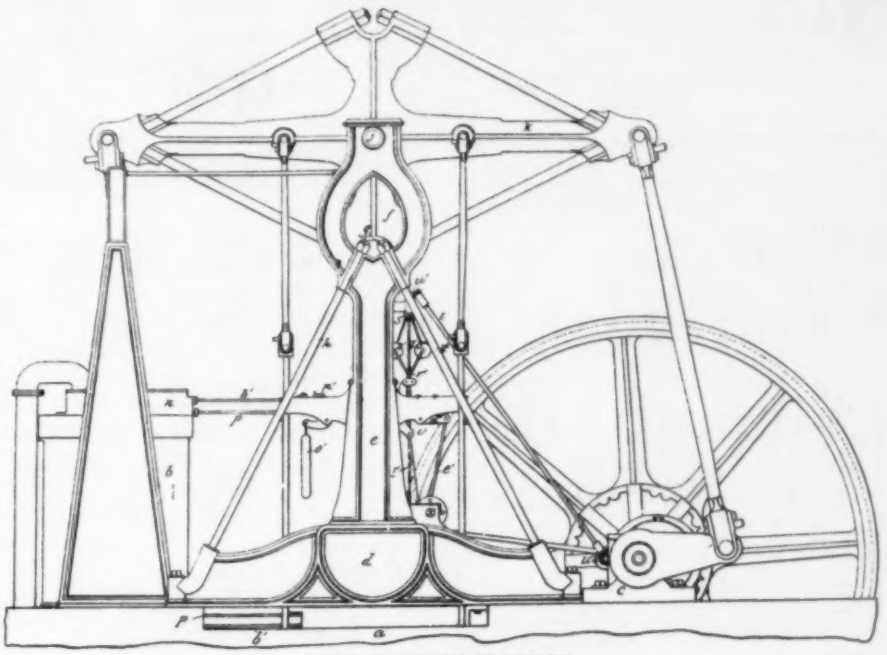
onal tension brace rods to the boxes of the crank shaft, and that these being fully strained by the nuts, no force that is not sufficient to separate the connection will be able to force these apart to any injurious extent so that during this upward action the frame will not work or yield and on the return or downward stroke of the piston the strain on the shaft of the beam will be exerted vertically on the standards and therefore on the horizontal beams which are held in a state of tension by the tension braces and therefore this action of the steam will not cause the frame to work or yield materially unless such force be sufficient to break the metal. The parts being thus braced and under tension and pressure, independently of the force of the engine, will effectually prevent that working of the frame which in a short time causes some part or parts of the engine to break or become deranged.

The steam and exhaust valves are arranged above and below the top and bottom of the cylinder in steam chests, the one at top, and formed in the cylinder head, and the other let into a recess in the bed plate. The exhaust valves are attached to valve rods provided with appropriate slide heads one for each, which by connecting rods are jointed to arms of two levers that turn on fulcrum pins the other arms being in turn connected each with a wrist of a rock shaft, the two wrists being distant about a quarter of a circle, so that when one is at its greatest leverage the other is at the dead point.

As one valve must not be opend until the other is closed, or nearly so, and vice versa, and the two derive their motions from one and the same rock shaft, the wrists on the rock shaft are so situated, relatively to the valves, that they are each in turn opened and closed by that portion of the motion of the wrist which communicates the greatest longitudinal motion to the connecting rod, and when one is performing this motion the other wrist is performing that portion of its motion which communicates the least longitudinal motion to the connecting rod, hence while the two wrists are performing the same length of rotation the one which operates the opening and closing valve gives a quick movement to its valve to open and close the port rapidly, whilst the other valve which moves over the closed port and therefore under the full pressure of steam, moves very slowly, and vice versa. The rock shaft is provided with an arm which receives the required vibratory motion by a connecting rod from an eccentric in the usual manner of operating the valve gear of steam engines.



THE CORLISS ENGINE

with its framework of tension braces. One of the patent drawings accompanying U. S. Patent No. 6,162.

The steam valves are provided with double valve rods attached to sliding heads and connected with, and operated by the rock shaft in manner similar to the exhaust valves above described, with this exception, that the levers that are connected with the rock shaft by means of connecting rods instead of being jointed to rods connected with the slide heads of the steam valve rods, as in the exhaust valves, are each provided with a cogged sector which operate sliding racks and these racks instead of being jointed to the cross heads of the valve stems are so formed as to be engaged and disengaged with the connecting rods by means of catches on the valve rods which catch onto corresponding lips on the racks and there held by springs.

Valve Action

When the steam valves are closed the vibration of the rock shaft alternately moves one of the racks sufficiently far to become engaged with the catch of one of the rods and on the return motion so soon as the valve is sufficiently open a projection on the rod strikes against a cam on a vertical rod which disengages the catch from the sliding rack and permits the valve to be closed quickly to cut off the supply of steam, by means of a bent lever one arm of which bears against the back of a small air cylinder attached to the double valve rods, and the other arm having a weight suspended to it, the moment the catch is liberated the gravity of the weight closes the valve to cut off the supply of steam that it may complete the stroke of the engine by expansion. Toward the end of the closing motion of the valve the small air cylinder attached to the valve rods embraces a piston attached to the frame which condenses the air within the cylinder and thus acts as a buffer or elastic cushion to prevent the slamming of the machinery and breakage consequent thereon.

The two steam valves are arranged, mounted and connected in the same manner, and are therefore operated in the same manner, and are alternately operated by the rock shaft; and their connection being made with the rock shaft in the same manner, although at different points, as the exhaust valves, they of necessity operate on the same principle, with the exception specified for cutting off the steam.

The cams are helical projections on the peripheries of two cylinders on a sliding and rotating rod attached to the slide of the governor so that when the governor, which receives its rotation from the crank shaft by a line shaft and bevel wheels, moves too fast the rising of the balls will elevate the rotating and sliding rod and with it the helical cams which by their helical form and rotation come in contact with the pro-

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jections on the valve rods to strike them the sooner and therefore to liberate the valves at a shorter part of the stroke of the piston and the sooner to cut off the steam which will reduce the power of the engine and consequently its velocity. In this way the motions of the engine are regulated.

When the balls of the governor are entirely down, as when the engine is at rest, the helical cams are below the plane of motion of the steam valve rods, so that these can have their full motion without striking the cams. In this position of the parts the steam valves will operate in manner similar to the exhaust valves, and the steam will not be cut off. All that is necessary therefore to work the engine full stroke is simply to liberate the slide of the governor, or disconnect the governor.

When the steam valves are not to be used as cut-off valves they are to be operated in every particular like the exhaust valves. It will be obvious from the foregoing that when the valves are arranged to move in planes parallel with the axis of the cylinder, as is usual with slide valves, that the rock shaft by which they are operated is to be differently located, and that whenever the location of the rock shaft is to be changed that the joints of connection of the connecting rods therewith are to be placed nearer together or farther apart so as to give the required range of motion to the valves in accordance with the principle of my invention.

Science News Letter, August 6, 1932

AERONAUTICS

New Features Built Into Next Navy Airship, "Macon"

THE NAVAL airship Macon, under construction at the mammoth airship dock in Akron, Ohio, will embody several changes as compared with her sister ship, the Akron, completed there last year.

Such changes do not extend to general measurements. The overall length of 785 feet and maximum diameter of 132.9 feet and the shape were set at the outset for both ships. Neither will they affect location and design of control car and control surfaces.

In relation to substituting a gear ratio of two to one in the Macon for the ratio of 1.75 to one in the Akron, the eight propellors of the latest airship will be bigger but slower than the eight of the Akron. This, airship engineers believe, will result in greater efficiency.

The Macon will emerge from her cocoon-like home entirely equipped with gelatin latex fabric cells, somewhat lighter in weight than rubberized latex fabric cells, while the Akron's cells are constructed of half of each kind of these materials. Gelatin latex fabric for cells is a development of Goodyear-Zeppelin laboratories.

From two to four small helium valve hoods will appear on top of the Macon, as compared with a single one for the valves of the Akron, a change to decrease "drag" and so bring greater speed.

No operator will be needed for the Macon's telephone, as with the Akron, since an automatic board is being set up for the ship's sixteen stations.

Engineers are also cutting down partition weight on the Macon. The Akron is equipped with seven bunk rooms, but the Macon will have only two.

The Macon is also to embrace changes in the operation of the ingenious water recovery system found on the Akron, in which condensers on motors at the exhaust liquefy combustion vapors. Under this system, consumption of fuel does not lighten the ship, but instead builds up a supply of water ballast for constant equilibrium.

Science News Letter, August 6, 1932

Talking moving pictures are to be introduced in the lecture rooms of the University of Chicago.

The roof of the New York Polyclinic Hospital has been converted into a realistic ship's deck, where convalescents may enjoy the air in surroundings that suggest the sea rather than the hospital.

Stressing the importance of cleaning rugs, home economics specialists at the University of New Hampshire point out that rugs are not worn out so much by shoe leather as by grit and dirt which, trampled into the weave, cut the threads.

EXPLORATION-GENERAL SCIENCE

Scientists Begin Occupying Stations for Polar Year Work

SCIENTISTS of thirty-three nations are taking their posts at more than 100 observing stations scattered over the earth to begin 13 months of the most intensive scientific work ever attempted.

About half of the 100 stations are permanent and have been in operation for years; the other half are being set up for this Second International Polar Year and many of them are on sites of First Polar Year Stations operated fifty years ago.

But for the coming work, Polar Year is a misnomer. Roughly 40 of the 100 stations will be in the Arctic, above the 55th parallel, and a few will be in the Antarctic, while the rest will be scattered over the warmer parts of the earth.

Participation of the United States will be manifest in the establishment of an important observing point at the village of College, near Fairbanks, Alaska. Scientists had hoped that Fort Conger on Ellesmere Island, northeast of Canada, could be occupied again through private subscription, but the lack of funds prevented the carrying out of this project. Observations were made from Fort Conger by the ill-fated Greely expedition during the First Polar Year. The station near Fairbanks, however, will be an important one at which special observations are to be made.

Among the latest expeditions to take to the field are one from France and another from Denmark, which will set up stations in Greenland. University of Michigan scientists under Prof. Ralph L. Belknap have also left for Greenland. On this, their fifth expedition to the continent of ice, they will continue studies of air currents and ice.

A Danish scientist, who has reached Cape Town, is carrying instruments with which he will set up stations in South Africa and Madagascar, according to information received by Director J. A. Fleming of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. Additional observations will be made in the far south from an Argentine station in the Orkney Islands and from a post which Chile has promised to put up in the southern part of South America.

Polar Year officials hope to coöperate with the second Byrd Antarctic Expedition which, it is expected, will occupy stations in the Antarctic continent during 1933.

While the northern stations are scheduled to begin operations in August of this year, those in the far south will wait until summer comes to that part of the world, and January has been set as their opening month.

Science News Letter, August 6, 1932

PHYSIOLOGY

Stomach Ulcers Produced By Protein Starvation

ULCERS of the stomach are caused by a lack of protein in the diet. This is indicated by experiments on rats performed by Frederick Hoelzel and Esther da Costa at the University of Chicago.

The experimenters kept large numbers of rats on alternate "foodless days" and days when they got food. They gave different groups of the animals a wide variety of diets, with a range from no protein at all to a comparatively high protein ration. In addition, they kept one good-sized group of rats on a normally balanced ration, as "controls."

None of the controls developed stomach ulcers, but all of the rats without protein did, and many of those on the lower protein diets as well. In general, there was a correlation between protein starvation and incidence of ulcers.

Some of the rat groups received various other articles along with their measured protein rations. These included spices, antacid salts, alcohol, salt and hydrochloric acid. None of these made any difference, so long as the rats got enough protein.

Neither did bulk of food make any difference. Some of the rats were given almost nothing to eat but bran. They practically starved to death; but because bran contains sufficient protein, when taken in large quantities, they did not develop stomach ulcers. Furthermore, when rats with ulcerated stomachs were put on a nearly exclusive bran diet they got well, in spite of the supposedly irritating effect of the "scratchy" flakes.

As a result of these and other experiments, Mr. Hoelzel recommends a high-protein diet for human sufferers from stomach ulcers. However, he cautions, it will not do to increase the protein intake too suddenly, because other experiments have indicated that ill effects can follow immoderate indulgence in proteins in the early stages of ulcer healing.

Science News Letter, August 6, 1932

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7 GREAT SCIENTISTS

want to talk to you in your home

SCIENCE is absorbingly interesting. Scientists bring forth new points of view, new discoveries, new relationships of old discoveries, and thus they themselves are absorbingly interesting as human beings.

Men and women of intellectual curiosity would like to entertain many of these scientists, one by one, in their homes, but this is usually impracticable.

1 DR. ROBERT A. MILLIKAN, Nobel prize winner in physics, leader in scientific thought and head of the California Institute of Technology, speaks on *"The Rise of Physics."*

2 DR. JOHN C. MERRIAM, authority on the fossil animals and reptiles of western America, president of the Carnegie Institution of Washington, speaks on *"The Record of the Rocks."*

3 DR. EDWIN G. CONKLIN, Princeton University biologist, one of the world's greatest authorities on life processes, speaks on *"The Mystery of Life."*

4 DR. KARL T. COMPTON, eminent physicist, president of the Massachusetts Institute of Technology, speaks on *"Science and Engineering."*

5 DR. LEO H. BAEKELAND, industrial chemist and one of America's industrial pioneers, inventor of bakelite, velox, etc., speaks on *"Chemistry and Civilization."*

6 DR. WILLIAM H. WELCH, of Johns Hopkins University, "Dean of American Medicine" speaks on *"The Tubercle Bacillus."*

7 DR. WILLIAM M. MANN, director of the National Zoological Park of the Smithsonian Institution, leading authority on animal life, speaks on *"Our Animal Friends."*

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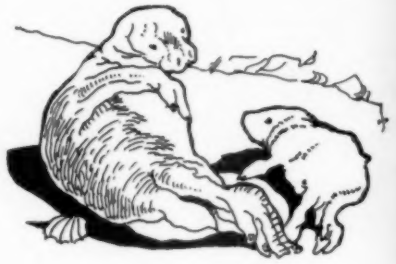
ZOOLOGY

NATURE RAMBLINGS

by Frank Thone



Seals

WHEN SEALS are mentioned, we normally think of one or two things: either of the carefully conserved herd on the Pribiloff Islands, or of the clever and appealing animals we see in circuses balancing things on their noses. But these are not the only seals in the world; vacationers on northern shores almost everywhere will catch glimpses of sleek, wet heads thrust out of the water, periscope-fashion: for seals are as curious as they are without fear when they are in the water.

The circus seals are of the subdivision of the seal clan known commonly as sea-lions. They are smaller than the fur seals, and their pelts are not valuable. Their homes are farther south for the most part; and the famous seal rocks of the Golden Gate, in California, are inhabited by sea-lions.

Seals in general show in a striking and curious way the effect of a watery environment on animal evolution. Hardly any vertebrate animal could be less like a fish in its fundamental structure than a seal, yet the seals have come to have streamlined bodies on the fish pattern, and have modified their hind feet into something very much like a fish's tail.

The seal's flippers, though they look more or less like fins, are none the less true feet, quite as much as are the feet of dogs and cats. The bones within them are the bones of thigh, lower leg, ankle, foot and five toes, all present and accounted for. The leg-bones are shortened and thickened, and the foot is broadened and flattened into a paddle shape. It is as though a human swimmer had put on a thick leather mitten to make his stroke more effective.

• First Glances at New Books

Additional Reviews on Page 92

Geography

PIONEER SETTLEMENT—By 26 Authors—*American Geographical Society,* 473 p., 98 maps and diagrams, $5. With all its two billion inhabitants, the earth still offers wide open spaces that challenge the pioneer. In this volume 26 specialists describe the progress of pioneer settlement today, each analyzing the problems in the region he knows best. The studies, made under the joint auspices of the Social Science Research Council and the American Geographical Society, carry the reader from Mongolia to Africa, from Australia to the "Western zones of experiment" in the United States. The science of settlement takes a new step forward with the publication of this world survey.

Science News Letter, August 6, 1932

Natural History

THE MEN OF THE LAST FRONTIER—Grey Owl—*Scribner,* 253 p., $3.50. Beyond the fringe of civilization in Canada may still be found pioneers living in a world of adventurous exploration. Grey Owl, the name given the author by the Ojibway Indians, has spent his life as a trapper, fire-ranger, and guide, and in recent years as an ardent preserver of the beaver. Readers who are "outdoors" folk will enjoy Grey Owl's vigorous and sympathetic telling of the world he knows so well, with its Indians, moose hunts, journeys over wilderness trails, and, most particularly, his friends, the beaver people.

Science News Letter, August 6, 1932

Education

THIRTY-FIRST YEARBOOK OF THE NATIONAL SOCIETY FOR THE STUDY OF EDUCATION: PART I, A PROGRAM FOR TEACHING SCIENCE—Ed. by Guy Montrose Whipple— *Public School Pub. Co.,* 370 p., $2.50. Prepared by the Society's Committee on the Teaching of Science and others with a view to coordinating the teaching of science in the elementary and secondary schools.

Science News Letter, August 6, 1932

Pharmacology

ABSTRACTS OF SCIENTIFIC LITERATURE HAVING A RELATION TO THE OFFICIAL PRODUCTS OF THE UNITED STATES PHARMACOPOEIA, TENTH REVISION—*U. S. Pharmacopoeia Board of Trustees,* 195 p., free to those interested. This abstracting was done by the staff of the library of E. R. Squibb and Sons in Brooklyn, Miss E. Pickering, director. The abstracts are from more than 300 different journals in the fields of medicine, pharmacy, chemistry and biology, representing the more important journals in the world. The abstracts are singularly clear and informative and should be of great value to all interested in the general subject.

Science News Letter, August 6, 1932

Agriculture

YEARBOOK OF AGRICULTURE, 1932—U. S. Department of Agriculture—*Government Printing Office,* 975 p., $1. Uncle Sam's annual review of farming in its multiplex aspects is devoted in part to statistics, living standards, census figures, land use, and farm credit discussions. Under the title "What's New in Agriculture" there are about a hundred brief reports of research written by experts of the department. Farm mechanization has a section to itself. Secretary Hyde's annual report is also included.

Science News Letter, August 6, 1932

Education

EIGHTH YEARBOOK — *Educational Press Association of America,* 31 p. This yearbook is particularly valuable in that it contains a classified list of educational periodicals and a list of 60 educational books of 1931.

Science News Letter, August 6, 1932

Hygiene

HYGIENE OF COMMUNITY, SCHOOL AND HOME—Ernest W. Steel and Ella G. White—*Harper and Brothers,* 368 p., $2.25. Public health as a matter of citizenship is emphasized in this book which is designed primarily for health teachers.

Science News Letter, August 6, 1932

Public Health

A SURVEY OF HEALTH ORGANIZATION AND SERVICE—Allen W. Freeman—*N. Y. State Charities Aid Assn.* Dr. Freeman's reports and recommendations following surveys of Ontario and Columbia Counties, New York, are published in separate volumes of under 100 pages each. The recommendations should be interesting and helpful to officials of other prosperous, rural counties that have not yet reorganized their public health activities on a modern scale.

Science News Letter, August 6, 1932

History-Military Science

AMERICAN AND EUROPEAN SWORDS IN THE HISTORICAL COLLECTIONS OF THE UNITED STATES NATIONAL MUSEUM—Theodore T. Belote — *Govt. Print. Off.,* 163 p., 46 pl., 35c. Exhibits in the National Museum illustrate the history of the sword in the past few centuries. They also place before the eye the personal weapons of many famous men. Using these exhibits as an outline, the Museum's Curator of History traces the evolution of American military swords from 1750, and naval swords from 1800. Another section of the monograph is devoted to swords of different European countries, and to foreign diplomats' swords, of which the Museum has a notable collection.

Science News Letter, August 6, 1932

Psychology

NORMAL YOUTH AND ITS EVERYDAY PROBLEMS—Douglas A. Thom—*Appleton,* 368 p., $2.50. An interesting and helpful book for parents and all others concerned with the somewhat perplexing task of aiding normal, healthy, youngsters to adjust to approaching adulthood.

Science News Letter, August 6, 1932

Sociology

THE MODERN AMERICAN FAMILY—Edited by Donald Young—*American Academy of Political and Social Science,* 256 p., $2. An issue of the Annals containing many interesting contributions on various problems of modern family life.

Science News Letter, August 6, 1932

Archaeology

PRELIMINARY CLASSIFICATION OF PREHISTORIC SOUTHWESTERN BASKETRY—Gene Weltfish — *Smithsonian Inst.,* 47 p., 25c. Taking up a number of well-known Southwestern sites, one by one, the author lists the types of basketry found in each and describes the techniques. Pictures of the different techniques are a helpful addition to the text.

Science News Letter, August 6, 1932

Physics-Chemistry

INSTRUMENTS FOR SPECTROGRAPHIC ANALYSIS—*Bausch and Lomb,* 48 p., free. A description of apparatus commercially available with brief theoretical and practical explanations and bibliography.

Science News Letter, August 6, 1932

First Glances at New Books

Continued from page 91

History-Ethnology

THE PRIVATE LIFE OF THE ROMANS—Harold Whetstone Johnston, revised by Mary Johnston—*Scott, Foresman,* 430 p., $2.24. This well-known book, which has made the Romans more real to many a student and teacher of the classics, has entered into a new phase of its career in this up-to-date edition. The daughter of the author, herself a Latin scholar, has handled the revision. The subjects range from houses, dress, travel, amusements, to religion, marriage, country and town life, economics. There are 326 illustrations, including two colored maps.

Science News Letter, August 6, 1932

Archaeology

EXCAVATIONS AT DURA-EUROPOS—Edited by P. V. C. Baur, M. I. Rostovtzeff, and Alfred R. Bellinger—*Yale University Press,* 168 p., 20 pl., $2. A preliminary report of the third season of work in the winter of 1929-1930 by the expedition from Yale and the French Academy of Inscriptions and Letters. The Greek period of the city's history has become notably clearer from these excavations. Various members of the expedition report on the temples and other buildings of the city, on inscriptions that have come to light, sculptures, coins, armor, and other objects of significance.

Science News Letter, August 6, 1932

Mental Hygiene

PROCEEDINGS OF THE FIRST INTERNATIONAL CONGRESS OF MENTAL HYGIENE — *International Committee for Mental Hygiene,* 2 vol., 1,650 p., $10. The proceedings of this important conference will be welcomed by all interested in the subject. They represent a cross-section of opinion which has practical value now and will be of great historical interest in the future. An index adds considerably to the publication's usefulness.

Science News Letter, August 6, 1932

Medicine

TWENTY-THIRD REPORT OF THE HENRY PHIPPS INSTITUTE, 1931—*Henry Phipps Institute,* 504 p. The report contains reprints of papers and addresses on the important work done at the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis. Subjects covered are epidemiology and clinical course of tuberculosis, bacteriology and pathogenesis of tuberculosis, immunology and inflammation, and leukemia. Others working in this field will be glad to find these papers collected in one handy volume.

Science News Letter, August 6, 1932

Ethnology

FAITH, HOPE, AND CHARITY IN PRIMITIVE RELIGION—R. R. Marett—*Macmillan,* 239 p., $3. The foundation of this book is the series of Gifford Lectures for 1931-1932. Dr. Marett, an Oxford anthropologist, deals here with the beginnings of moralization of religion, which he traces to feeling rather than to thinking. Besides the three factors named in the title, Dr. Marett discourses also on conscience, curiosity, lust, cruelty, fear, and admiration.

Science News Letter, August 6, 1932

Philosophy

THE LAWS OF MOTION IN ANCIENT THOUGHT—F. M. Cornford—*Macmillan,* 47 p., 75c. This inaugural lecture by the Laurence professor of ancient philosophy at the University of Cambridge ends with the sentence: "The knowledge which is wisdom is conceived by Plato as a marriage of the human soul with truth and reality; and it is hard to think of the soul as married to the laws of thermodynamics or a chain of equations."

Science News Letter, August 6, 1932

Archaeology

THE TOMB OF QUEEN MERYET-AMUN AT THEBES—H. E. Winlock—*Metropolitan Museum of Art,* 100 p., 46 pl., $10, paper; $12, board. When the Metropolitan Museum's archaeologists entered and explored the tomb of Meryet-Amun, they found evidence that the place was twice robbed and restored. Furthermore, the queen's tomb was chosen as the resting place for a princess, Entiu-Ny. In this volume Mr. Winlock stresses the evidence regarding robberies and restorations, because it sheds direct light on the administration of the royal tombs in that period.

Science News Letter, August 6, 1932

History

HELLENISTIC QUEENS—Grace Harriet Macurdy—*Johns Hopkins Press,* 250 p., $4. This volume by the professor of Greek at Vassar College bears the apt sub-title, "A Study of Woman-Power in Macedonia, Seleucid Syria, and Ptolemaic Egypt." Cleopatra and the other Macedonian queens had such influence and often such political power that they deserve historic recognition. Yet, historians have tended to ignore them almost completely, except to condemn them for crimes and caprices. In this book the deeds and characters of the queens are studied in relationship to the life of their own time—which, the author points out, is the only method of dealing with them fairly.

Science News Letter, August 6, 1932

History-Geography

ROMAN BRITAIN—R. G. Collingwood—*Oxford Univ. Press,* 160 p., $2. The Roman occupation of Britain has often been pictured as an episode, having little influence on Britain's history. Mr. Collingwood shows the real importance of Romanized Britain in this revision of his justly popular sketch of the period. He tells us that so much has been learned in the past nine years that he had to rewrite almost the entire book. There are 59 illustrations and a map.

Science News Letter, August 6, 1932

Medical Biography

HEALTH HEROES: ROBERT KOCH—Grace T. Hallock and C. E. Turner—Metropolitan Life Insurance Co., 30 p., 5 copies free to each teacher requesting them. An interesting account of the life of this great hero of science is added to the biographies in the Health Heroes Series for junior and senior high schools.

Science News Letter, August 6, 1932

Preventive Medicine

THE CONTROL OF TUBERCULOSIS IN THE UNITED STATES—Philip P. Jacobs—*National Tuberculosis Association,* 407 p., $2. This book is a concise, interesting account of the history, methods and achievements of the movement in the United States to control tuberculosis. Tuberculosis and public health workers generally will appreciate having so many interesting facts brought into one convenient volume.

Science News Letter, August 6, 1932

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